



# Introducing the Synthesis of Arctic Research (SOAR)

Sue Moore  
Phyllis Stabeno  
Lisa Guy



# OVERVIEW

- **WHAT:** *synthesis of multi-disciplinary marine science information for the Pacific Arctic Region (PAR); funding: 1.8M*
- **WHEN:** *5-year project, in 2 phases (2011-2016)*
- **WHERE:** *focus is US waters of the PAR, but integration of information from Canadian and Russian studies is encouraged*
- **WHY:** *lots of marine research in PAR, but little integration and synthesis*
- **WHO:** *guidance - 11 member Science Steering Committee + Pls  
Project Management - NOAA/PMEL; NOAA/Fisheries S&T  
Project Coordinator - L. Guy  
Integration and Synthesis - multiple laboratories*

[\*\*\*http://www.arctic.noaa.gov/soar/\*\*\*](http://www.arctic.noaa.gov/soar/)



# SOAR SYNTHESIS OF ARCTIC RESEARCH



## Physics to Marine Mammals in the Pacific Arctic

Lisa Sheffield Guy, Joint Institute for the Study of the Atmosphere and Ocean, University of Washington, NOAA/PMEL, 7600 Sand Point Way NE, Seattle, WA, 98115  
Sue E. Moore, NOAA/Fisheries-ST7, 7600 Sand Point Way NE, Seattle, WA, 98115  
Phyllis Stabeno, NOAA/Pacific Marine Environmental Laboratory, 7600 Sand Point Way NE, Seattle, WA, 98115

**Abstract:** The Synthesis of Arctic Research (SOAR) purpose is to bring together a multidisciplinary group of Arctic scientists and residents to explore and integrate information from completed and ongoing marine research in the Pacific Arctic. Supported by a MOU between BOEM-Alaska Region and NOAA-PMEL, the synthesis is guided by a 13-member Science Steering Committee formed of senior scientists and local residents with decades-long experience in ecosystem and resource management in the Pacific Arctic. The first annual meeting of the SSC was held in November.

Science themes were developed which will guide integration of research into a series of peer-reviewed publications. A larger SOAR workshop with invited contributors will be held in spring 2012. Workshop participants will inventory available data and evaluate its sufficiency to address specific cross-disciplinary hypotheses. Teams will be formed to target each science theme and will meet both independently and as a group to achieve SOAR goals. The synthesis will be completed in 2016, providing important information to management decision-makers and guiding future research activities.

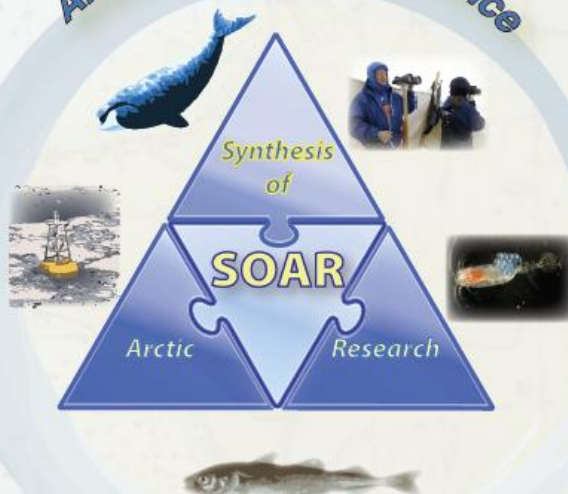
### Science Objectives

Increase scientific understanding of the biophysical environment

Enhance capability to predict future conditions

Effectively transmit findings of the synthesis to local residents, resource managers, science societies, and the general public

### Arctic Ecosystem Science



### Science Themes

Ecosystem Response to Bottom-up and/or Top-down Forcing

Marine Birds, Mammals, and Fish as Ecosystem Sentinels

Acoustic Ecology

### Integration

[www.arctic.noaa.gov/soar](http://www.arctic.noaa.gov/soar)

Principal Investigators: Sue Moore and Phyllis Stabeno  
Science Steering Committee  
Jackie Grebmeier: Research Professor, University of Maryland Center for Environmental Science; member Polar Science Board and International Arctic Research Committee  
Tom Weingartner: Professor of Physical Oceanography, School of Fisheries and Ocean Sciences, University of Alaska, Fairbanks  
Carin Ashjian: Senior Scientist with Tenure, Biology Research, Woods Hole Oceanographic Institution  
Chris Clark: Director of Bioacoustic Research, Cornell University  
J. Craig George: Senior Wildlife Biologist, Department of Wildlife Management, North Slope Borough  
Robert Suydam: Senior Wildlife Biologist, Department of Wildlife Management, North Slope Borough

Taqulik Hepa: Director, Department of Wildlife Management, North Slope Borough; member Alaska Eskimo Whaling Commission  
Vera Metcalf: Executive Director, Eskimo Walrus Commission; Native Representative, Marine Mammal Commission  
Chad Jey: Research Ecologist, U.S. Geological Survey, Alaska Science Center  
Robyn Angiles: Deputy Director, National Marine Mammal Laboratory, Alaska Fisheries Science Center, National Oceanic and Atmospheric Administration (NOAA)  
Tim Ragen: Executive Director, Marine Mammal Commission  
BOEM COE: Heather Crowley  
Project Coordinator: Lisa Sheffield Guy



# SCIENCE STEERING COMMITTEE

## Project PIs: Moore & Stabeno

- **Robyn Angliss**  
Deputy Director, NOAA National Marine Mammal Laboratory, Alaska Fisheries Science Center
- **Carin Ashjian**  
Senior Scientist with Tenure, Biology Research, Woods Hole Oceanographic Institution
- **Chris Clark**  
Director, Bioacoustic Research, Cornell University
- **J. Craig George**  
Senior Wildlife Biologist, Department of Wildlife Management, North Slope Borough
- **Jackie Grebmeier**  
Research Professor, U.of Maryland Center for Env.Science; Arctic Ocean Sciences Board, Internat'l Arctic Science Committee
- **Taqulik Hepa**  
Director, Dept of Wildlife Management, North Slope Borough
- **Chad Jay**  
Research Ecologist, Alaska Science Center, U.S. Geological Survey
- **Vera Metcalf**  
Executive Director, Eskimo Walrus Commission, Native Representative, Marine Mammal Commission
- **Tim Ragen**  
Executive Director, Marine Mammal Commission
- **Robert Suydam**  
Senior Wildlife Biologist, Department of Wildlife Management, North Slope Borough
- **Tom Weingartner**  
Professor, Physical Oceanography, School of Fisheries & Ocean Sciences, Univ. of Alaska, Fairbanks

# DRAFT SCIENCE THEMES

Result of 1<sup>st</sup> SSC meeting, November 2011

## 1. Ecosystem Response to Bottom-up and/or Top-down Forcing

- How are spatial and temporal variations in sea ice linked to primary production?
- How do primary production hotspots correspond to zooplankton, benthic, forage fish, and marine bird and mammal hotspots?
- How are stressors and habitat alteration affecting the biological components of the marine ecosystem?

# DRAFT SCIENCE THEMES

continued

Result of 1<sup>st</sup> SSC meeting, November 2011

## 2. Marine Birds, Mammals, and Fish as Ecosystem Sentinels

- How can combined track maps from satellite-tagged marine birds and mammals be used to identify hotspots and evaluate habitat partitioning among species?
- What can marine bird and mammal diet, body condition, health status, and abundance inform us about environmental change and variability?

## 3. Acoustic Ecology

- How are sound fields changing with loss of sea ice, change in weather patterns, and extension of the open-water season?
- What are the effects of shipping, drilling operations, and seismic activity on marine mammal and bird prey and the availability of subsistence resources to local communities?

# SOAR PROJECT TIMELINE

- 2011 Establish and convene Science Steering Committee
- 2012 Conduct SOAR Science Workshop: **14-16 March 2012**
  - Refine synthesis themes & questions
  - Form Analytical Teams based on themes & questions
  - Identify required data, analysis, and modeling for each theme
  - Analytical Teams submit theme-based proposals
- 2013 Follow-on theme-based meetings and/or integrative workshops
  - Annual meeting; Present and communicate science products
- 2014 Annual meeting; Present and communicate science products
  - Augment Analytical Team funding
- 2015 Annual meeting; Present and communicate science products
- 2016 Peer-reviewed special issue of SOAR findings in scientific journal



# RELATIONSHIP TO SOME OTHER SYNTHESIS EFFORTS

- NPMRI/NPRB RFP: *Arctic Data Synthesis Research & Needs*  
2 elements = Data Synthesis & Research Needs  
emphasis on Partnerships – esp. w/SOAR & CSESP  
required consultation with Alaska Native coastal villages  
1-year timeline from grant award to final report (June `12-July `13)
- Chukchi Sea Environmental Studies Program (CSESP)  
initiated in 2008  
sponsored by ConocoPhillips, Shell & Statoil  
reports available: <http://www.fairweatherscience.com>
- NPRB Project 503: Arctic Ocean Synthesis (Hopcroft et al. 2008)  
summarized state of knowledge, by discipline, in Chukchi and Beaufort Seas  
10 working groups identified information gaps, research needs, and potential climate change impacts  
report available: [www.arcdiv.org/news/NPRB\\_report2\\_final.pdf](http://www.arcdiv.org/news/NPRB_report2_final.pdf)